

# Vibration Isolation Platform for Long Range Optical Communications, Phase I

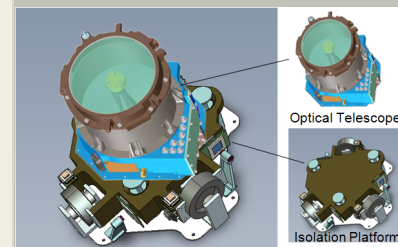
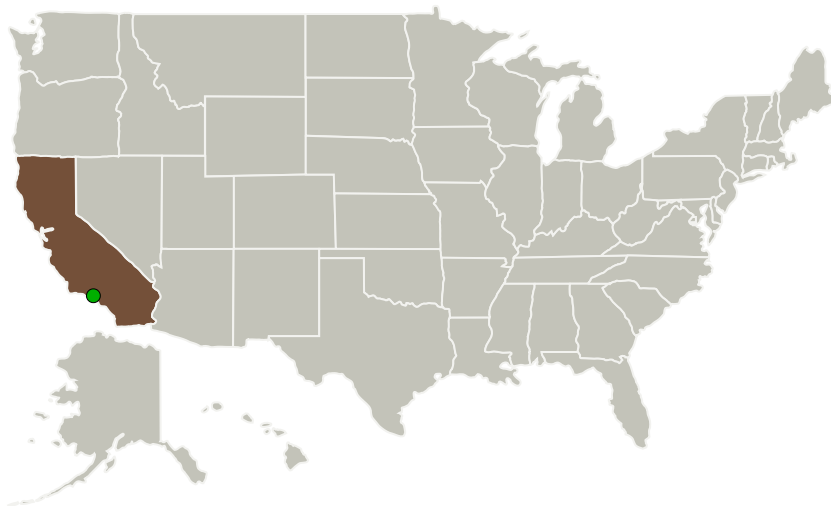
Completed Technology Project (2013 - 2013)



## Project Introduction

Optical communication links provide higher data transfer rates with lower mass, power, and volume than conventional radio-frequency links. For deep space applications at long operational ranges, high performance stabilization of the space terminal data link is required. To meet this need, CDI proposes a novel application of our free-floating isolation platform. Based upon a Shuttle-proven technology, this approach yields 6-DOF isolation from the disturbances of the host vehicle while providing high-bandwidth active stabilization to attenuate both payload disturbances as well as any residual disturbances transferred from the base across the power/data umbilical. The proposed approach is designed to achieve better than 0.5microradian-rms stabilization for all frequencies above 0.1Hz when operating in a space environment. Phase I develops the proposed design concept, performs architecture trade studies, and predicts performance to establish the feasibility of the approach. Using an available free-floating isolation platform and a 2-axis low-g testbed, the design concept is prototyped and demonstrated on hardware in a simulated low-g environment (TRL-5). Phase II proceeds with the development of a prototype system that will be space qualified through comprehensive ground testing (TRL-6). Technology demonstration flight tests will be proposed on sRLVs and/or ISS platforms (e.g., WORF, OPALS upgrade), achieving a TRL-7 maturity by the end of Phase II.

## Primary U.S. Work Locations and Key Partners



Vibration Isolation Platform for Long Range Optical Communications

## Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

Vibration Isolation Platform for Long Range Optical Communications,  
Phase I

Completed Technology Project (2013 - 2013)



Organizations Performing Work	Role	Type	Location
Controlled Dynamics, Inc.	Lead Organization	Industry	Huntington Beach, California
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

## Primary U.S. Work Locations

California

## Project Transitions

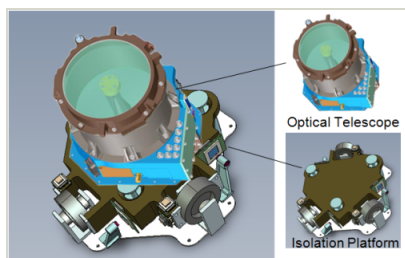
▶ **May 2013:** Project Start

✓ **November 2013:** Closed out

## Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140711>)

## Images



## Project Image

Vibration Isolation Platform for Long Range Optical Communications

(<https://techport.nasa.gov/image/131133>)

## Organizational Responsibility

## Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

## Lead Organization:

Controlled Dynamics, Inc.

## Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

## Program Director:

Jason L Kessler

## Program Manager:

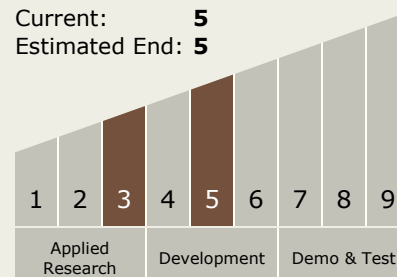
Carlos Torrez

## Principal Investigator:

Scott Green

## Technology Maturity (TRL)

Start: 3  
Current: 5  
Estimated End: 5



# Vibration Isolation Platform for Long Range Optical Communications, Phase I

Completed Technology Project (2013 - 2013)



## Technology Areas

### Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - └ TX05.5 Revolutionary Communications Technologies
    - └ TX05.5.3 Hybrid Radio and Optical Technologies

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System